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Invention: GRAPEVINE DRIVEN UPDATING TECHNIQUE

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TITLE: GRAPEVINE DRIVEN UPDATING TECHNIQUE

BACKGROUND OF THE INVENTION:

FIELD OF THE INVENTION

The present invention relates to grapevine driven updating technique and more particularly, the present invention relates to an updating technique which allows mobile terminals which are in close proximity to each other to update each other with newer versions of data or software that they share.

DESCRIPTION OF THE BACKGROUND

Presently, the trend has been for mobile terminals to store more and more data and software. This data may include electronic business cards and other information. Software is constantly being updated and corrected when necessary.

U.S. Patent No. 6,023,620 to Hansson discloses a method for downloading control software to a cellular telephone. In the method of Hansson, new or updated software must be transmitted individually from an update server processor to each in every cellular telephone requiring software updating.

European Patent Application No. EP 895157 to Maeda discloses a remote maintenance method and apparatus which, in a fashion similar to Hansson, also transmits new or updated software individually in a wired or wireless network.

German Patent No. DE 19741703 discloses loading operating software into a mobile telephone and then transferring software to the telephone via a wireless interface and then

temporarily storing software in a first memory area and then loading software in a second area after successful loading.

These earlier disadvantageous systems, among others, made it very difficult to update data and software for mobile terminals in that they had to update each mobile terminal individually. Alternatively, they could broadcast new or updated software to all mobile terminals. However, this requires an enormous amount of wireless resources and in addition, broadcasting such new or updated software will not reach mobile terminals which are out of the service area or turned off.

Another alternative which has been used in the past is to provide a Web site containing software updates or new software for use by mobile terminals. This requires each mobile terminal user to periodically check the Web site to determine if the mobile terminal software requires updating or if new software is to be added. Additionally, the software provider cannot easily determine if all of the mobile terminals needing new software or updated software have received such new or updated software.

SUMMARY OF THE INVENTION

In view of the disadvantages noted above, it is an object of the present invention to provide an updating technique which allows mobile terminals which are in close proximity to each other to update each other with newer versions of data or software that they share.

In accordance with the present invention, utilizing a short range communication method, such as a low-power RF system (e.g.-the Bluetooth System), or an optical system such as an infrared system, mobile terminals which are in close proximity with each other conduct handshaking arrangements to determine shared data and software. The terminals

then update each other so that they each have the latest versions of the shared data and software.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and a better understanding of the present invention will become apparent from the following detailed description of example embodiments and the claims when read in connection with the accompanying drawings, all forming a part of the disclosure of this invention. While the foregoing and following written and illustrated disclosure focuses on disclosing example embodiments of the invention, it should be clearly understood that the same is by way of illustration and example only and the invention is not limited thereto. The spirit and scope of the present invention are limited only by the terms of the appended claims.

The following represents brief descriptions of the drawings, wherein:

Figure 1 is a block diagram of a pair of mobile terminals which may be used with the technique of the present invention.

Figures 2A and 2B together form a flowchart illustrating one example embodiment in accordance with the technique of the present invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

Before beginning a detailed description of the subject invention, mention of the following is in order. When appropriate, like reference numerals and characters may be used to designate identical, corresponding, or similar components in differing drawing figures.

Furthermore, in the detailed description to follow, example sizes/models/values/ranges may be given, although the present invention is not limited thereto.

Figure 1 is a block diagram of a pair of mobile terminals, 100 and 110, which may be used with the technique of the present invention. Mobile telephones and many other mobile and non-mobile terminals will soon have low-power RF transceivers, such as the Bluetooth System, contained therein. Alternatively, these terminals may have infrared transceivers contained therein. These low-power RF transceivers or infrared transceivers allow these terminals to communicate with each other when they are in close proximity to each other. Furthermore, these terminals may also have Internet access capabilities and may also have various pieces of data and software installed on them by the user.

One example of such pieces of data would be electronic business cards stored in a mobile terminal. If a user has electronic business card containing various information, such as the user's name and business association and address and telephone number and e-mail address and facsimile number, etc., and if the user has recently made changes to the information contained within his electronic business card, it would be advantageous for the user to be able to automatically update his electronic business card stored in a terminal of a second person who the user has come in contact with. Furthermore, it would be advantageous for the second person who has the updated electronic business card stored in his terminal to automatically update the user's electronic business card stored in a third person's terminal upon the second person coming in contact with the third person. This updating would be effected by the technique of the present invention.

Thus, by updating the electronic business card stored in the user's terminal, the user can cause an update to propagate out geometrically so as to hopefully update most of the terminals having the user's electronic business card stored therein. This is very useful in an office situation in which a group of people share many of the same electronic business cards. When one person updates his electronic business card, the updated electronic business card should propagate outward very quickly.

Another example would be if a user updated a piece of software contained within his terminal. The technique of the present invention would allow the user to automatically update the same piece of software contained within a terminal of a second person who the user has come in contact with. The second person would then be able to automatically update the same piece of software contained within a terminal of a third person who the second person has come in contact with, thereby allowing the updated software to propagate outward very quickly in a geometric fashion.

Figures 2A and 2B together form a flowchart illustrating one specific example embodiment in accordance with the technique of the present invention. The example embodiment discusses the use of the Bluetooth System for wireless communication between the terminals. However, as noted above, the use of the Bluetooth System is purely for exemplary purposes and the present invention is not limited thereto.

The details of the Bluetooth System have not been included for the sake of brevity. The Specification of the Bluetooth System, Volumes 1 and 2, Version 1.1, issued February 22, 2001, is readily available on the Bluetooth Website: <http://www.bluetooth.com>.

Referring to Figures 2A and 2B, in step 200, the procedure in accordance with one example of the technique of the present invention begins.

In step 205, the mobile terminal 100 initiates the updating process. For example, the Bluetooth System includes an arrangement which allows one mobile terminal to detect the presence of another mobile terminal within its range. Accordingly, the mobile terminal 100 can initiate the updating process upon the detection of the presence of the mobile terminal 110 within its range. Alternatively, the mobile terminal 100 can initiate the updating process every predetermined time interval, such as once every minute.

In step 210, the mobile terminal 100 sends an inquiry to the mobile terminal 110. Depending on the protocol of the communication link between the mobile terminal 100 and the mobile terminal 110, the inquiry may merely ask if mobile terminal 110 wishes to be updated or may ask if mobile terminal 110 wishes to be updated and includes a list of data or software presently stored in the mobile terminal 100 and their version numbers.

In step 220, the mobile terminal 110 responds to the inquiry from the mobile terminal 100 if the mobile terminal 110 is in an automatic mode which allows it to automatically update its data or software upon an inquiry from another mobile terminal.

Alternatively, in step 225, the mobile terminal 110 informs its user of the inquiry from the mobile terminal 100 with an audible tone or visual indicator or alphanumeric notification on the display of the mobile terminal 110. Then, in step 230, the user manually causes the mobile terminal 110 to respond to the inquiry from the mobile terminal 100.

Not shown in Figures 2A and 2B are additional handshaking steps between the mobile terminal 100 and the mobile terminal 110 if the inquiry by the mobile terminal 100 did not include a list of the data or software stored in the mobile terminal 100 and their version numbers.

In step 235, the mobile terminal 110 informs the mobile terminal 100 of those pieces of data or software which it wishes to receive updates on. In step 240, the mobile terminal 100 forwards the updates to the mobile terminal 110.

In step 250, the mobile terminal 110 sends an inquiry to the mobile terminal 100 which corresponds to the inquiry from the mobile terminal 100 to the mobile terminal 110 in step 210.

Steps 255, 260, 265, 270, and 280 respectively correspond to steps 225, 230, 235, 220, and 240 with the difference being that the operations of the mobile terminal 100 and the mobile terminal 110 are reversed. That is, the mobile terminal 110 forwards the updates to the mobile terminal 100.

The process is then ended in step 290.

Note that steps 250-280 do not necessarily automatically follow step 240. That is, the process can end after step 240 and a new process initiated by the mobile terminal 110 starting at the equivalent of step 205.

The pieces of data or software to be updated from one mobile terminal to another may include, for example, electronic business cards stored in the mobile terminals. In addition, commonly used software could be updated with newer versions of the same software or software patches could be added or even operating system upgrades could be forwarded from one mobile terminal to another.

This includes the description of the example embodiment. Although the present invention has been described with reference to an illustrative embodiment thereof, it should be understood that numerous other modifications and embodiments can be devised by those skilled in the art that will fall within the spirit and scope of the principles of this

What is claimed is: